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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/080,539	02/25/2002	Akira Kagoshima	500.41253X00	8273

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EXAMINER

MOORE, KARLA A

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 11/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Feb 7

Office Action Summary

Application No.

10/080,539

Applicant(s)

KAGOSHIMA ET AL.

Examiner

Karla Moore

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 5-15 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2002/0155629 to Fairbairn et al. in view of U.S. Patent No. 6,106,659 to Spence et al. and U.S. Patent No. 5,769,952 to Komino.

3. Fairbairn et al. disclose a semiconductor manufacturing apparatus substantially as claimed in Figures 9A-C and comprising: an integrated measuring instrument (906A) for pre- or post-measuring the form or size of an element to be formed into a wafer; an etching unit (902) for etching said wafer; an ashing unit (909) for ashing said etched wafer; a wetting unit (911) for wetting said etched wafer; a transport means (904 and 907) whereby the wafers introduced into a cassette (908) are transported one by one successively to said integrated monitoring instrument and each of said working units; and a transport chamber (multiple part numbers--903, 907 and 909) in which said integrated measuring instrument, etching unit, ashing unit, wetting unit and transport means are connected by a depressurizable transport passage (paragraph 55), and which is provided with a wafer cassette inlet (located where cassettes 908 are attached to the transport chamber) for receiving a cassette containing a plural number of sheets of wafer to be etched.

4. However, Fairbairn et al. fail to teach the etching unit as generating plasma under a reduced pressure.

5. Spence et al. teach that by operating in the moderate, rough-vacuum pressure range, plasma treater systems can be used (a) to treat substrates in an efficient cost-effective manner and (b) to produce treated substrates having superior surface properties as compared to those generated using

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prior-art systems, such as corona-type discharge systems operating at either low pressures (i.e. < 1 Torr) or high pressures (abstract).

6. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a plasma treater system at a vacuum in Fairbairn et al. in order to treat substrates in an efficient, cost-effective manner and produce treated substrates having superior surface properties as compared to prior-art systems as taught by Spence et al.

7. Fairbairn et al. also fail to teach a drying chamber as part of the semiconductor manufacturing apparatus.

8. Komino teach the use of a drying apparatus in semiconductor manufacturing systems for the purpose of drying a treatment object after it has been cleaned (column 6, rows 7-22).

9. It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to provide a drying chamber in Fairbairn et al. in order to dry substrates after wet processing as taught by Komino.

10. With respect to claims 5 and 19, Fairbairn et al. teach that the integrated measuring instrument of the apparatus is capable of using reflectometry techniques (paragraphs 34 and 35).

11. With respect to claim 6, as noted above, the integrated measuring instrument is capable of pre- and/or post-measurements of wafer (paragraph 60).

12. With respect to claims 7-15, said integrated measuring instrument may be used either pre- or post-treatment and may be used to make optimal control of the etching means based on the measurements made (paragraph 64). Additionally, Fairbairn et al. teaches that based on the measurements a decision can be made to whether to continue or stop etching using a particular recipe based on the measurements of the form or size of the element of the wafer (paragraph 58).

13. With respect to claim 15, the etching may take place using a mask pattern (paragraph 69).

14. With respect to the recitations of claims 1, 5-15 and 19-20 drawn to the an intended order of treatment for a wafer capable of being treated using the claimed apparatus and the process flow of a group of wafers housed in a cassette, the courts have ruled that a claim containing a "recitation with

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respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). Additionally, the inclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims. *In re Young*, 75 F.2d 966, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)). The prior art apparatus described above would be capable of the intended use recited in the present claims. Additionally, although Fairbairn et al. do not teach the intended use of Applicant's claims as a preferred use, Fairbairn et al. do teach that Applicant's intended use processing using an integrated measuring instrument on a lot-to-lot basis is conventional (paragraph 64).

15. Claims 2 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fairbairn et al., Spence et al., and Komino as applied to claims 1, 5-15 and 19-20 above, and further in view of U.S. Patent No. 6,042,623 to Edwards.

16. Fairbairn et al., Spence et al., and Komino disclose the invention substantially as claimed and as described above, including teaching that an integrated measuring tool may also be used as an alignment mechanism (paragraph 57 of Fairbairn et al.)

17. However, Fairbairn et al., Spence et al., and Komino fail to explicitly teach the integrated measuring instrument/alignment mechanism is capable of being set under normal pressure to measure the form or size of an element to be formed on the wafer.

18. Edwards teaches use of an alignment mechanism at normal pressure for the purpose of providing lower cost, less complicated handling and faster operation (column 7, rows 12-15).

19. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an integrated measuring instrument/alignment mechanism in Fairbairn et al., Spence et al., and Komino in order to provided lower cost, less complicated handling and faster operation as taught by Edwards.

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20. Claims 3 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fairbairn et al., Spence et al., and Komino as applied to claims 1, 5-15 and 19-20 above, and further in view of U.S. Patent No. 5,695,564 to Imahashi.

17. Fairbairn et al., Spence et al., and Komino disclose the invention substantially as claimed and as described above.

18. However, Fairbairn et al., Spence et al., and Komino fail to teach the integrated measuring instrument connected to the etching unit, via a depressurized transport passage, and the wafer is measured under reduced pressure.

19. Imahashi et al. teach configuring a multi-chamber type process system so that a depressurized passage (transfer unit, U2) is capable of being connected to a processing chamber (such as an etching unit, U1 or U2) and an integrated measuring unit (interconnection unit, U3) where a wafer can be measured under reduced pressure for the purpose of providing an apparatus capable of various functions, tests, alignment, temperature control, etc., thereby performing the tests, alignment, temperature control, etc. during the transfer of wafers and greatly enhancing the throughput of the system (column 16, rows 3-8).

20. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a depressurized passage capable of being connected to a processing chamber and an integrated measuring where a wafer can be measured under reduced pressure in Fairbairn et al., Spence et al., and Komino in order to provide an apparatus capable of various functions, tests, alignment, temperature control, etc., thereby performing the tests, alignment, temperature control, etc. during the transfer of wafers and greatly enhancing the throughput of the system as taught by Imahashi.

21. Claims 4 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fairbairn et al., Spence et al., and Komino as applied to claims 1, 5-15 and 19-20 above, and further in view of Japanese Patent Publication No. 2000173530 to Watanabe.

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22. Fairbairn et al., Spence et al., and Komino disclose the invention substantially as claimed and as described above.

23. However, Fairbairn et al., Spence et al., and Komino fail to teach the integrated measuring instrument mounted at a position in a load lock chamber under reduced pressure to measure the form or the size of an element to be formed on a wafer.

24. Watanabe teaches mounting an integrated measuring instrument at a position in a load lock chamber under reduced pressure for the purpose of improving accuracy to find an inferior wafer by detecting the state of the wafer before and after processing and judging whether the processing has been rightly implemented (abstract).

25. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an integrated measuring instrument mounted at a position in the load lock chamber under reduced pressure in Fairbairn et al., Spence et al., and Komino in order to find an inferior wafer by detecting the state of the wafer before and after processing and judging whether the processing has been rightly implemented as taught by Watanabe.

Response to Arguments

26. Applicant's arguments filed 8/6/03 have been fully considered but they are not persuasive.

27. In response to applicant's argument that the prior art fails to disclose the "order of treatment" as recited in the present claims, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

28. Applicant also amended claims 2-4 and 16-18 to recite limitations not previously claimed. New art and rejection have been applied.

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Conclusion

29. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 703.305.3142. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703.308.1633. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.0661.

km

*Primary Examiner
AU 1762
P. Hassanredet*